GEORGIA INSTITUTE OF TECHNOLOGY — OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[x] ORIGINAL [ ] REVISION NO. _____

Project No. A-3348 GTRI/~~GIT~~ DATE 9/27/82

Project Director: Nick L. Faust ~~School~~/Lab EML

Sponsor: USMERADCOM

Ft. Belvoir, VA 22060

Type Agreement: SFRC No. DAAK70-82-K-0221

Award Period: From 9/3/82 To ~~9/3/83~~ 11/1/83 (Performance) 9/3/83 (Reports)

Sponsor Amount: Total Estimated: $ 47,871 Funded: $ 47,871

Cost Sharing Amount: $ _____ Cost Sharing No: _____

Title: LANDSAT Analysis Capability for CAPIR

ADMINISTRATIVE DATA OCA Contact Linda H. Bowman x4820

1) Sponsor Technical Contact:

Mr. George E. Lukes
USA Engineer Topgraphic Laboratory
Fort Belvoir, VA 22060
ETL-RI-B

2) Sponsor Admin/Contractual Matters:

a) Ms. Linda Neilson
USAMERADCOM, Ft. Belvoir, VA 22060
(703) 664-6977

b) ONR RR for property admin. (except approval)
plant clearance; closeout
campus

Defense Priority Rating: none

Military Security Classification: unclassified
(or) Company/Industrial Proprietary: _____

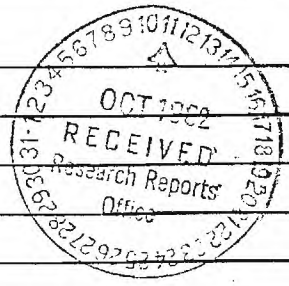
RESTRICTIONS

See Attached SFRC Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval -- Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with GIT

COMMENTS:



COPIES TO:

Research Administrative Network	Research Security Services	Research Communications (2)
Research Property Management	~~Reports Coordinator~~ (OCA)	Project File
Accounting	GTRI	Other _____
Procurement/EES Supply Services	Library	Other

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 12/7/83

Project No. A-3348 ~~School~~ Lab EML

Includes Subproject No.(s) _____

Project Director(s) Nick L. Faust GTRI / ~~GTRI~~

Sponsor USMERADCOM

Title LANDSAT Analysis Capability for CAPIR

Effective Completion Date: 11/1/83 (Performance) 11/1/83 (Reports)

Grant/Contract Closeout Actions Remaining:

- [ ] None
- [x] Final Invoice or Final Fiscal Report
- [x] Closing Documents
- [x] Final Report of Inventions
- [x] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

Continues Project No. _____ Continued by Project No. _____

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Accounting
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Research Communications (2)
Project File
Other _____

Form OCA 60:1028

Monthly Progress Report

Project A-3348

For

September, 1982

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

December 1, 1982

I. Technical Progress

During September EES investigated the problems that could be encountered in transferring our SATELLITE software system to an AOS (Advanced Operating System) system. The programs in SATELLITE are modular and input/output operations are isolated in a few programs. Both disk and tape input/output will be affected by the conversion. Data transfer between the eclipse and the image processing system will be addressed within the next few months.

EES is attempting to obtain the use of a Data General S250 system running AOS to proceed in the conversion of software. This development should require less on site time at ETL, since most of the debugging can be handled in Atlanta.

II. Budget

	Month	Total Expended	% Spent
Personal Services	$1454	$1454	6%
Fringe	299	299	6%
Materials and Supplies	0	0	0%
Travel	0	0	0%
Overhead	828	828	6%
Total	$2581	$2581	6%

Monthly Progress Report

Project A-3348

For

October, 1982

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
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Atlanta, Georgia 30332

December 1, 1982

I. Technical Progress

During October preliminary conversion of input/output routines was initiated. EES is writing an emulator for all magnetic tape input/output (I/O) so that the same calls used under the RDOS operating system will be able to be used in the AOS environment.

While disk I/O is similar between RDOS and AOS, EES is investigating the ability of some AOS commands to handle larger indexed sequential files than can be manipulated using RDOS.

The chaining, swapping, and overlay structure in AOS is being studied to determine any advantages over RDOS. Macro formation and use will be enhanced by using the AOS system as well as and time/logging functions.

EES has obtained the use of an AOS S250 eclipse to test some of the software to be delivered to ETL. The S250 system will be implemented at EES as a part of another project in early November.

II. Budget

	Month	Total Expended	% Spent
Personal Services	$ 797	$2251	9%
Fringe	162	461	9%
Materials and Supplies	62	62	10%
Travel	0	0	0%
Overhead	481	1309	9%
Total	$1502	$4083	9%

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Monthly Progress Report

Project A-3348

For

November, 1982

Submitted By
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Atlanta, Georgia 30332

January 4, 1983

I. Technical Progress

During November EES received and installed a Data General S250 with two 300 mby disks, 1 mby memory, and a DeAnza 6400 series display. The system will be used with the sponsor's permission for the preliminary development of the AOS version of EES software. AOS version 4.27 is currently running on the system. Other peripherals include: 1 magnetic tape drive, 1 22-inch Versatec printer/plotter, 1 Calcomp digitizer, and a Princeton Graphics display.

EES has developed the system level Fortran callable routines for magnetic tape I/O. Lessons learned in converting image processing software to the DeAnza should help in the interface with ETL's Vicom system. Medium level disk input/output programs have been implemented to create and interact with image disk files.

II. Budget

	Total Budget	Total Expended	Month	Total %
Personal Services	$24,863	$4,326	$2,075	17
Fringe	5,221	814	353	16
Materials and Supplies	600	199	137	33
Travel	1,776	0	0	0
Overhead	15,321	2,520	1,210	16
Total	$47,781	$7,858	$3,775	16

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Monthly Progress Report

Project A-3348

For

December, 1982

Submitted By
Nickolas L. Faust
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Atlanta, Georgia 30332

March 8, 1983

I. Technical Progress

During December EES developed a set of driver software for the EES DeAnza system that should be adaptable to a Vicom interface. EES started the transfer of the Landsat and geographic database software to the AOS applications system during this period. A set of magnetic tape and disk input/output drivers were adapted from an RDOS environment to AOS. Programs for initial preview of Landsat data and programs for unsupervised pattern recognition were adapted during this period.

II. Budget

	Total	Expended	Month	% Spent
Personal Services	$24,863	$ 8,798	$4,472	35
Fringe Benefits	5,221	1,539	725	29
Materials and Supplies	600	229	31	38
Travel	1,776	0	0	0
Overhead	15,321	4,987	2,468	33
	$47,781	$15,554	$7,696	33

Monthly Progress Report

Project A-3348

For

January, 1983

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
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Atlanta, Georgia 30332

March 8, 1983

I. Technical Progress

During January EES implemented more of the SATELLITE software system on our AOS Data General system. Programs for loading various format Landsat data onto the disk system were written and checked out. An image directory will be used to store Landsat data and geographic data bases (gridded). Many of the gridded data base analysis programs were implemented during this period, and programs for training sample selection were started.

II. Budget

	Total	Expended	Month	% Spent
Personal Services	$24,863	$ 8,867	$ 69	36
Fringe Benefits	5,221	1,553	13	30
Materials and Supplies	600	232	3	39
Travel	1,776	0	0	0
Overhead	15,321	5,027	40	33
	$47,781	$15,679	$125	33

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Monthly Progress Report

Project A-3348

For

February, 1983

Submitted By
Nickolas L. Faust
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Atlanta, Georgia 30332

April 1, 1983

I. Technical Progress

During February EES continued to convert RDOS based Landsat and Geographic Information system software to AOS. Working versions of the raw data display and training sample selection software were implemented and checked out during this period. Several array processor dependent programs were also implemented and tested in February. Point clustering and convolution are now working signature analysis software for combining signature files, individual signatures and listing signature files were also implemented. A graphics presentation of two dimensional signature ellipse plots was also achieved.

II. Budget

	Total	Expended	Month	%
Personal Services	$24,863	$11,477	$2,610	46%
Fringe Benefits	5,221	2,047	495	39%
Materials and Supplies	600	267	35	45%
Travel	1,776	0	0	0
Overhead	15,321	6,509	1,482	42%
Total	$47,781	$20,300	$4,621	42%

Monthly Progress Report

Project A-3348

For

March, 1983

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

April 19, 1983

I. Technical Progress

During March EES continued development of the applications programs on the AOS system. Initial work was done on the implementation of a statistical clustering technique originally developed by NASA. Many of the enhancement techniques of the EES Satellite package were implemented and tested during this period. Principal components transformation was integrated and tested as well as RATIO and linear combination processing. While the basic algorithms are working some cleanup operations will be necessary before total insertion into the menu and help file structure.

Also during this period documentation of the driver and applications oriented image processor functions was initiated.

II. Budget

	Total	Expended	Month	%
Personal Services	$24,863	$13,755	$2,279	55%
Fringe Benefits	5,221	2,395	347	46%
Materials & Supplies	600	274	7	46%
Travel	1,776	0	0	0
Overhead	15,321	7,752	1,243	51%
Total	$47,781	$24,176	$3,876	51%

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Monthly Progress Report

Project A-3348

For

April, 1983

Submitted By
Nickolas L. Faust
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Engineering Experiment Station
Atlanta, Georgia 30332

May 16, 1983

I. Technical Progress

During April EES worked further on the enhancement and pattern recognition segments of the Satellite system. A method for dealing with large image formats in which the random read index becomes greater than 32,000, are being handled in our disk I/Ø package.

The statistical clustering technique now seems to be working adequately, even though it is often difficult to come up with appropriate initial parameters for the program.

Documentation is proceeding on parts of the Satellite system.

II. Budget

	Total	Expended	Month	%
Personal Services	$24,863	$17,508	$3,753	70%
Fringe Benefits	5,221	3,147	753	60%
Materials & Supplies	600	291	17	49%
Travel	1,776	0		0%
Overhead	15,321	9,887	2,134	65%
Total	$47,781	$30,833	$6,657	65%

Monthly Progress Report

Project A-3348

For

May, 1983

Submitted By
Nickolas L. Faust
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Atlanta, Georgia 30332

June 30, 1983

I. Technical Progress

During May much progress was made in the documentation of programs in the EES Landsat package. Each program is being exercised, and any errors detected are corrected immediately.

Work was done during May in testing EES code with Landsat D Thematic Mapper 8 channel data. Principal components, training field selection, maximum liklihood and minimum distance classification algorithms were tested.

AOS versions of many of the signature manipulation and enhancement algorithms are complete, but still need to be fully tested.

EES urgently needs all documentation on the driver program for the VICOM image processor. Integration of this image display into our system cannot proceed until documentation is received.

II. Budget

	Total	Expended	Month	%
Personal Services	$24,863	$20,824	$3,316	84%
Fringe Benefits	5,221	3,793	646	73%
Materials & Supplies	600	650	359	108%
Travel	1,776	0	0	0
Overhead	15,321	11,926	2,039	78%
Totals	$47,781	$37,193	$6,360	78%

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Monthly Progress Report

Project A-3348

For
June, 1983

Submitted by
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Atlanta, Georgia 30332

August 3, 1983

I. Technical Progress

During June, testing continued on the signature manipulation and enhancement algorithms. Improvements in user interaction (file selection, default answers, etc.) were made to several programs.

An on-campus installation of a VICOM system was investigated as a possible initial test site for the display programs. Documentation of the ETL VICOM system was requested.

II. Budget

	Budget	Month	Total Spent	%
Personal Services	$24,863	$3,177	$24,001	96
Fringe Benefits	5,221	717	4,509	86
Materials & Supplies	600	1	651	108
Travel	1,776	0	0	0
Overhead	15,321	1,839	13,764	89
Total	$47,781	$5,734	$42,927	89

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Monthly Progress Report

Project A-3348

For

July, 1983

Submitted By
Nickolas L. Faust
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Atlanta, Georgia 30332

August 31, 1983

TECHNICAL PROGRESS

During July, methods for utilizing AOS IPC's (Inter Process Communication) facilities were investigated for interfacing the VICOM to the Landsat software. VICOM documentation was received and reviewed.

Testing of the Landsat programs user interaction continued back in the RDOS environment. AOS modules were prepared for transport to ETL.

Installation of programs at ETL is scheduled to occur in September.

BUDGET

	Total	Expended	Month	%
Personal Services	$24,863	24,105	103	97%
Fringe Benefits	5,221	4,534	25	87%
Materials & Supplies	600	652	1	109%
Travel	1,776	0	0	0%
Overhead	15,321	23,828	64	90%
Totals	$47,781	43,119	193	90%

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Monthly Progress Report

Project A-3348

For

September, 1983

Submitted By
Nickolas L. Faust
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Atlanta, Georgia 30332

October 25, 1983

Technical Progress

During September, a short VICOM test program was developed to test the communication of commands from the host to the VICOM through the IPC facility.

Tapes of the image processing software and libraries were made for transfer to the ETL Eclipse.

Arrangements for software installation were finalized, and are now scheduled for October.

Budget

	Total	Expended	Month	%
Personal Services	$24,863	$24,234	$233	97.5
Fringe Benefits	5,221	4,564	55	87.4
Materials and Supplies	600	660	9	110.0
Travel	1,776	0	0	0.0
Overhead	15,321	13,911	147	90.8
Totals	$47,781	$43,371	$444	90.8%